PLANT IMMIGRANTS.

No. 173. SEPTEMBER, 1920.

GENERA REPRESENTED IN THIS NUMBER.

Plates:

Foreign Seed and Plant Introduction.

EXPLANATORY NOTE.

This multigraphed circular is largely made up from notes received from agricultural explorers, foreign correspondents, cooperators, and others, relative to the more important plants which have recently been received by the Office of Foreign Seed and Plant Introduction of the Department of Agriculture; in it are also contained accounts of the behavior in America of plants previously introduced. Descriptions appearing here are revised and published later in the Inventory of Seeds and Plants Imported.

Applications from experimenters for plants or seeds described in these pages may be made to this Office at any time. As they are received the requests are placed on file and when the material is ready for the use of experimenters it is sent to those who seem best situated and best prepared to care for it. The plants or seeds here described (except such as are distributed direct or are turned over to specialists in the Department who are working on investigational problems) are propagated at our Plant Introduction Field Stations; and when ready to be distributed are listed in our annual check lists, copies of which are sent to experimenters in the late fall. It is not necessary, however, to await the receipt of these lists should one desire to apply for plants which are described herein.

One of the main objects of the Office of Foreign Seed and Plant Introduction is to secure material for plant breeders and experimenters. Every effort will be made to fill specific requests for experimental quantities of new or rare foreign seeds or plants.

David Fairchild,
Agricultural Explorer in Charge

Office of Foreign Seed and Plant Introduction,
Bureau of Plant Industry,
U. S. Department of Agriculture.

Issued Oct. 16, 1920. Washington, D.C.

Ardisia sp. (Myrsinaceae), 51052. From Chama, Guatemala. Seeds presented by Mr. Harry Johnson. "No. 228. Seeds of a red-berried shrub collected at Xalave, at an altitude of about 1,500 feet. The berries are produced quite freely in flat-topped clusters, 2 to 3½ inches in diameter, along the larger stems on short branchlets as well as terminally; the bright, shining red berries are one-fourth to one-half inch in diameter and, with the foliage, make the shrub quite ornamental. I have not noticed the birds molesting the fruits and the bunches always appear well filled. The berries evidently last in perfection a long time as I have observed them for two months or more and they are still perfectly fresh and clean. The shrub may be of value as a red-berried pot plant for florists and for outside planting in Florida and California."(Johnson.)

Coccoloba sp. (Polygonaceae), 50683. From San Jose, Costa Rica. Collected by Mr. Wilson Popenoe, agricultural explorer. "(No. 376.) Plants presented by Mr. Carlos Wercklé, El Coyolar, Costa Rica. Mr. Wercklé describes this as a small tree, evergreen, much branched, and handsome in appearance. It produces blue-black fruits the size of small plums, with juicy flesh of acid, somewhat astringent flavor, good for making jellies and preserves, and also for eating out of hand when of a good variety. The single stone is rather large. This plant may succeed in southern Florida. It is from the lowlands of Costa Rica, and hence tropical in its requirements." (Popenoe.)

Dendrocalamus giganteus (Poaceae), 51026. **Bamboo**. From Peradeniya, Ceylon. Seeds presented by Mr. H. F. Macmillan, superintendent, Royal Botanic Gardens. The tallest of the bamboos, a native of the Malay Peninsula but much cultivated in Burma, where it is known as 'wabo' and in Assam as 'worra.' It is used in Burma for posts and rafters in house-building, for carts, and for joints for pails, boxes, flower-pots, etc. The large culms are often 120 feet long and 25 to 30 inches in circumference. Extra fine culms are cut into short lengths and prepared as umbrella stands.

The rapid growth of this strikingly handsome bamboo was tested in the Botanic Guarden at Buitenzorg, Java, where the plant grew, on the average, 7.7 mm. per hour by day and 13 mm. per hour by night. One culm grew .57 cm. in 24 hours. (Adapted from Watt, Commercial Products of India, p. 101; and Schimper, Plant

Geography upon a Physiological Basis, p. 216.)
For previous introduction see S. P. I. No. 45963, Plant Immigrants, No. 145, May, 1918, p. 1319.

Hibiscus brackenridgei (Malvaceae), 50693. From Honolulu, Hawaii. Seeds collected by Mr. J. F. Rock, agricultural explorer. "A striking and well-marked rather rare new species with a shrubby erect stem, 4 to 5 feet high, stiff spreading branches and rather stout, very leafy flowering stalks, worthy of cultivation on account of its showy yellow flowers. The glabrous, membranous, bright-green leaves on long petioles are rounded in outline, 3½ to 4 inches in diameter, cordate, 5 to 7-lobed, with sharp and narrow sinuses; they are coarsely toothed and resemble those of the common grapevine. The spreading yellow corolla, pubescent outside, is about 6 inches across. Found in the scrub vegetation of the leeside of Oahu, East and West Maui, and Lanai." (Rock.)

Maranta sp. (Marantaceae), 50684. From San Jose, Costa Rica. Collected by Mr. Wilson Popenoe, agricultural explorer. "No. 377. 'Lairen.' Roots presented by Mr. Carlos Wercklé, El Coyolar, Costa Rica. A plant allied to arrowroot, and greatly resembling it in appearance. It yields large numbers of plump tubers, 2 to 4 inches long. These contain much starch, and can be eaten when boiled, though they never become soft or mealy. Mr. Wercklé thinks the species may be of value as a source of starch, because of the large quantity of tubers which each plant produces." (Popenoe.)

Paspalum notatum (Poaceae), 51121. Grass. From San Jose, Costa Rica. Collected by Mr. Wilson Popenoe, agricultural explorer. "No 418a. 'Gengibrillo.' Seeds presented by Alfredo Quiros. From sea level up to 5,000 feet this is probably the most important of the pasture grasses cultivated in Costa Rica; above 5,000 or 6,000 feet it is injured by frost and is not, therefore, extensively planted. In the lowlands it is especially esteemed; it makes a compact sod, crowding out weeds and other grasses and affording an abundance of nourishing green forage, eaten readily by both horses and cattle. It rarely grows more than a foot in height, and where pastured constantly does not often reach more than 6 inches." (Popenoe.)

A YOUNG AVOCADO ORCHARD IN QUERETARO, MEXICO.

(*Persea americana* Mill. See S. P. I. No. 46984.)

Avocado growers in the United States will be interested in this illustration of a 5-year-old orchard in the canyada at Queretaro. The trees are all seedlings of the Mexican race. Alfalfa is planted as a secondary crop, and the soil is irrigated regularly. The results obtained from plantations of this kind are so much better than those obtained where the trees are planted indiscriminately and given no care that Mexicans are rapidly coming to realize the desirability of devoting more attention to the development of such plantations. (Photographed by Wilson Popenoe, Queretaro, Mexico, July 23, 1918; P17539FS.)

PICKING AVOCADOS IN MEXICO.

(*Persea americana* Mill. See S. P. I. No. 46984.)

The avocado groves of Queretaro are probably the most extensive in Mexico. The trees are all seedlings of the Mexican race, and most of them produce small fruits like those here shown. Little care is used in picking the fruits; they are pulled from the tree with a hooked bamboo pole, and after they have fallen to the ground they are gathered and placed in large sacks in which they are carried to market. It speaks well for the shipping qualities of the Mexican avocados that they can stand such rough treatment. (Photographed by Wilson Popenoe, Queretaro, Mexico, July 23, 1918; P17538FS.)

Persea americana (Lauraceae), 50584. **Avocado.** From San Jose, Costa Rica. Collected by Mr. Wilson Popenoe, agricultural explorer. "No. 386. Budwood of Avocado No. 44, from the grounds of Chaille and Assmann, in San Vicente, a suburb of San Jose. This variety is recommended by Don Otón Jiminez as the best with which he is familiar. It is of the West Indian race, and is said to have been grown from a seed brought from Santa Clara, on the Atlantic side of Costa Rica. The tree is probably 30 or 40 years old at least, and is forty feet high, broad and round topped, with a well-formed crown and a shapely trunk branching 8 to 10 feet above the ground. The fruit, which is said to ripen in September and October, is green, obovoid in form, and probably a pound in weight at maturity. It is thought that some of the West Indian varieties of Costa Rica, which have been grown in the highlands at altitudes of 4,000 to 6,000 feet, may ripen at a time of the year which will make them valuable in California or Florida, more probably the latter. The variety under consideration comes from an altitude of aproximately 4,000 feet." (Popenoe.)

Petraea arborea (Verbenaceae), 50665. From Guatemala, Guatemala. Collected by Mr. Wilson Popenoe, agricultural explorer. "No. 365a. 'Cuero de Zapo.' This is one of the finest flowering climbers of the Tropics. It is occasionally seen in South Florida gardens, but is deserving of much wider cultivation in that region than it enjoys at present. It is a vigorous climber, with oblong leaves about 4 inches in length and harsh to the touch, and clusters of star-shaped flowers of sky-blue color. It blooms more or less during the year, but is fairly covered with flowers in the early spring." (Popenoe.)

Plumeria sp. (Apocynaceae), 50668. From Guatemala, Guatemala. Collected by Mr. Wilson Popenoe, agricultural explorer. "No. 354a. 'Palo de la Cruz.' Known in English as 'Frangipani,' and source of the perfume of the same name. A stiff, erect small tree, reaching about 25 feet in height, the branches naked except for clusters of leaves at the summit of each, where also appear in early spring clusters of single, white, star-shaped flowers of delicious fragrance. This species is probably known in Florida already, as several Plumerias are grown there to a limited extent; but it deserves much wider dissemination than has yet been given it in that state." (Popenoe.)

Quercus incana (Fagaceae), 50722. **Oak.** From Darjiling, India. Seeds presented by Mr. G. H. Cave, curator, Lloyd Botanic Garden. A large evergreen tree found on the temperate Himalayas from the Indus River to Nepal, between altitudes of 3,000 and 8,000 feet. In spring it becomes purplish owing to the burst of fresh new leaves which are softly tomentose. The bark yields a small quantity of reddish-fawn coloring matter which can be used in dyeing silk and cotton. The galls are used in the Punjab for dyeing the hair. The bark is extensively employed for tanning purposes. The acorns form the astringent medicine known in the Punjab bazaars as 'balut'; they are greedily eaten by monkeys and bears. The leaves are extensively lopped for fodder. (Adapted from Watt, Dictionary of the Economic Products of India, vol. 6, pt. 1, p. 382.)

Rubus sp. (Rosaceae), 51094. **Raspberry.** From San Jose, Costa Rica. Collected by Mr. Wilson Popenoe, agricultural explorer. "No. 423a. Seeds of 'Mora.' From the upper slopes of the Volcano Irazu, at 9,000 to 10,000 feet altitude. This berry, which is found only at altitudes of 9,000 feet and higher, is quite distinct from the several species which I have collected in Costa Rica at lower levels,- mainly between 4,000 and 6,000 feet. The slender canes, which are deep reddish green, grow 8 to 10 feet in length, and branch profusely, forming an impenetrable tangle.

The leaves are trifoliolate, and the flowers small and white. The fruits, which are produced in good-sized clusters, are oblong or oblong-oval, up to an inch in length, and composed of numerous, small, deep red drupelets. The flavor is distinctly that of the raspberry, and is very agreeable. The plant is a profuse bearer, and seems well worthy of trial in the southern United States." (Popenoe.)

Rubus glaucus (Rosaceae), 50691. **Blackberry.** From San Jose, Costa Rica. Collected by Mr. Wilson Popenoe, agricultural explorer. "No. 378a. Seeds from Rancho Redondo, near San Jose. 'Mora de Castilla.' This is either the same species sent from northern Guatemala under the name of 'uuk-tokan,' or one of very similar character. The plant resembles the 'uuk-tokan' very closely, and the fruit is of the same size and form but lighter in color, being of a light red shade. It has a delicious aroma, suggestive of strawberries. The fruit is oblong or somewhat ovate, up to an inch

in length, very plump, and soft and juicy when ripe. Several species of Rubus are given the common name 'mora de Castilla". This name is used to indicate, in fact, any Rubus that produces good fruits of blackberry or raspberry character." (Popenoe.)

For previous introduction see S. P. I. No. 49332, Plant Immigrants, No. 167, March, 1920, p. 1539.

Spatholobus parviflorus (Fabaceae), 50725. From Darjiling, India. Seeds presented by Mr. G. H. Cave, curator, Lloyd Botanic Garden. A gigantic climber common in the forests of the lower Himalayas in northeastern India, and in Ceylon. A red gum resembling kino exudes from this plant; the seeds yield an oil used for cooking, and for anointing purposes. A fiber obtained from the bark is twisted into ropes and bowstrings. (Adapted from Watt, Dictionary of the Economic Products of India, vol. 6, pt. 3, p. 319.)

Tulipa stellata (Liliaceae), 51113. Tulip. From Rawalpindi, Punjab, India. Seeds presented by Dr. R. R. Stewart, Gordon College. A very delicate species which is certainly a valuable acquisition to our gardens. It is remarkable for the narrowness of the petals and their spreading out almost flat in the middle of the day when the sun shines, and closing again in the evening. The small broadly ovate bulb, capped with 3 or 4 lanceolate segments thickly lined with fulvous hair, flowers in two months. In India where the plant is common, the bulbs are frequently eaten by natives and are sold for that purpose in some of the bazaars. The terete, glaucous stem, nearly 2 feet high in the cultivated species, bears 4 to 5 linear lanceolate leaves. The dainty, erect flowers, oblong in the bud, are either solitary or two upon the same stem. The lanceolate concave petals are pure white with a faint tinge of pink and green at the points, on the outside, and bright yellow at the base within. This plant is common in the western Punjab, the Salt Range, Siwaliks, and the outer Himalayas to Kumaon. (Adapted from Curtis's Botanical Magazine, pl. 2762; and Watt, Dictionary of the Economic Products of India, vol. 6, pt. 4, p. 203.)

Wercklea insignis (Malvaceae), 51124. From San Jose, Costa Rica. Collected by Mr. Wilson Popenoe, agricultural explorer. "No. 419. Cuttings presented by Dr. Ricardo Jiménez Núñez, of Guadelupe, San Jose. A rare and handsome plant, discovered a few years ago in the

mountains near La Palma, Costa Rica. It is an arborescent shrub about 15 feet in height, usually branching close to the ground to form several main limbs, which in turn branch (through sparingly) to form long stiff shoots, each crowned with a cluster of orbicular leaves nearly a foot in breadth. The flowers, which appear among the leaves at the ends of the branches, are similar in size and form to those of *Hibiscus rosa-sinensis*, the common hibiscus of the Tropics. In color, however, they are quite distinct from those of the hibiscus, being bright lilac, turning to golden in the throat. Since it is found in Costa Rica at an altitude of 5,000 feet, the species may be sufficiently hardy to succeed in southern Florida. It probably requires a moist climate, and in its indigenous condition it grows upon heavy soil." (Popenoe.)

Notes on Behavior of Previous Introductions.

Mr. A. E. Engebretson, superintendent, Oregon Agricultural College Experiment Station, Corvallis, Oreg., writes, April 17, 1920:

"We have at this Station specimens of the Japanese udo (*Aralia cordata*, S.P.I. No. 26565) that were received from the Department three years ago. The plants successfully withstood our severe winter and this year promise to be more vigorous than ever. We have eaten some cuttings of this plant and I can personally say tnat I like it."

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF PLANT INDUSTRY
OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION
WASHINGTON, D. C.

Washingon Scientific Staff.

David Fairchild, Agricultural Explorer in Charge.
F. H. Dorsett, Plant Introducer, in Charge of Field Stations.
B. T. Galloway, Plant Pathologist, in Charge of Detention Laboratories.
Peter Bisset, Plant Introducer, in Charge of Distribution.
Wilson Popenoe, J. F. Rock, and H. L. Shantz, Agricultural Explorers.
R. A. Young, Plant Introducer, in Charge of Dasheen Investigations.
H. C. Skeels, Botanist, in Charge of Collections.
G. P. VanEseltine, Asst. Botanist, in Charge of Publications.
H. E. Allanson, E. L. Crandall, L. G. Hoover, F. J. Hopkins, R. N. Jones, P. G. Russell, and C. C. Thomas, Assistants.
Edward Goucher, Plant Propagator.

Field Stations Scientific Staff.

R. L. Beagles, Superintendent in Charge, Field Station, Chico, Calif.
J. E. Morrow, Superintendent in Charge, (Yarrow) Field Station, Rockville, Md.
Edward Simmonds, Superintendent in Charge, Field Station, Miami, Fla.
Henry E. Juenemann, Superintendent in Charge, Field Station, Bellingham, Wash.
D. A. Bisset, Assistant in Charge, Field Station, Brooksville, Fla.
E. J. Rankin, Assistant in Charge, Field Station, Savannah, Ga.

Special Collaborators.

Mr. Thomas W. Brown, Cairo, Egypt; Mr. H. M. Curran, Bahia, Brazil; Mr. M. J. Dorsey, University Farm, St. Paul, Minn.; Mr. Robt. H. Forbes, Cairo, Egypt; Mr. A. C. Hartless, Seharunpur, India; Mr. E. W. D. Holway, Faribault, Minn.; Mr. Barbour Lathrop, Chicago, Ill.; Dr. H. L. Lyon, Honolulu, Hawaii; Mr. H. Nehrling, Gotha, Fla ; Mr. Charles T. Simpson, Littleriver, Fla.; Mr. H. P. Stuckey, Georgia Experiment Station, Experiment, Ga.; Dr. L. Trabut, Director, Service Botanique, Algiers, Algeria; Mr. H. N. Whitford, School of Forestry, New Haven, Conn.; Mr. E. H. Wilson, Arnold Arboretum, Jamaica Plain, Mass.